DOCUMENT RESUME

ED 023 253 EF 001 002

By-Van Hoose, Richard
New Building Manual, Elementary School.
Jefferson County Board of Education, Louisville, Ky.
Pub Date May 65
Note-84p.
EDRS Price MF-$0.50 HC-$4.30
Descriptors-Classrooms, Curriculum, Dining Facilities, Educational Objectives, *Educational Specifications, *Elementary Schools, Equipment, *Facility Guidelines, Furniture, Handicapped, Health Facilities, Playgrounds, *School Planning, *Space Utilization

A guide for planning elementary school facilities designed to aid architects and school staff when interpreting the needs of children and the school program in relation to space, arrangement, and facilities. General information regarding school planning, educational objectives, curriculum, and instruction to architects is contained. Various kinds of space, facilities, futniture, and equipment needed for the following areas are described--(1) general office, principal's office, conference room, mimeograph room, book store, health room, vault and teacher's lounge and work room, (2) classrooms for primary, middle and upper grades, (3) other instructional areas, such as special education, physically handicapped, hearing handicapped, speech correction, educable mentally handicapped, trainable mentally handicapped, corrective reading, music room, TV classroom, TV work and conference rooms, library, library work room, materials center, physical education room, blacktop play area, and primary and upper grade playgrounds, and (4) utility areas such as lunchrooms, kitchen, refrigerated storage, dry storage room, office area, dressing room and restroom, mechanical room, and other custodial storage. Separate sections include lighting and the relationship of school site to building and location, walks and drives, parking areas, grading, landscaping, and fencing. (RK)

NEW BUILDING MANUAL

ELEMENTARY SCHOOL

ED025253

JEFFERSON COUNTY BOARD OF EDUCATION

EDUCATION CENTER BUILDING

3332 NEWBURG ROAD

LOUISVILLE KENTUCKY 40218

EF 001 002

JEFFERSON COUNTY BOARD OF EDUCATION

STAFF

Richard VanHoose	Superintendent Jefferson County Schools
John L. Ramsey	Assistant Superintendent Division of General Administration
James E. Farmer	Assistant Superintendent Division of Instruction
Jack Dawson	Assistant Superintendent Division of Business Affairs
John E. Gambill	Coordinator of Buildings and Grounds

PUBLISHED BY

DEPARTMENT OF NEW BUILDINGS AND GROUNDS

MAY 1965

FOREWARD

Adequate school facilities are planned to provide an effective educational program to meet the needs of pupil and school personnel, school activities, and to serve the community of which the school should be an integral part. Money must be expended for school construction which should provide the best school facilities possible at the most economical cost. In order to provide these facilities, the need for a manual for new school construction has been recognized throughout many modern school systems, especially in rapidly expanding population areas. It is on these premises that this manual for elementary school planning is being written for our school system.

If the physical environment, conveniences, and other facilities provided by the building are to meet the needs of instruction, a continuous planning program for new elementary school construction should be the result of cooperative planning with teachers, supervisors, school administrators, architects, and other technical experts. An elementary school committee composed of an elementary school principal, elementary school teachers, and an elementary school librarian was chosen from personnel of recently constructed elementary schools in the county. Members were chosen with several years of teaching experience for their suggestions and comparative views on trends in new building construction. This committee, with assistance from the above mentioned personnel, did research work, conducted interviews with other school personnel, conducted preliminary and final committee meetings, and compiled the material.

As school systems enlarge, more and more of the school building planning must be delegated to a special department for advanced study. School systems want to provide functional school buildings which will aid in controlling the learning environment at the most reasonable cost possible. A school system wants to avoid repeating mistakes that increase cost or affect the operating efficiency of the building.

Various leading school systems throughout the South, East, and Middle West were contacted for similar materials to be used as a guide for study and structure of the new building manual. Special emphasis was given to school districts in areas with similar and equal economic advantages. Personal visits were made to many schools in those above areas for observation and suggestions on the latest arrangement of the offices, classrooms, and special areas. The type of free standing furniture and the arrangement of the built-in equipment were also observed. Planners in each community, however, can profit by experiences of planners and designers in other comparable communities.

This publication is a guide for planning facilities for the elementary school. It is designed to help the architect and the school staff interpret the needs of young children and their school program in relation to space, arrangement, and school facilities. There is no intent to bind the architect with unyielding specifications.

This manual was developed under the supervision and direction of the Coordinator of New Buildings and Grounds.

TABLE OF CONTENTS

PAGE

I. GENERAL INFORMATION

School Planning 1

Educational Objectives and Curriculum 5

Instructions to Architects. 9

II. OFFICE AREA

General Office. 16

Principal's Office. 17

Conference Room 18

Mimeograph Room 19

Bookstore 19

Health Room 20

Vault 20

Teachers' Lounge and Work Room. 21

III. STANDARD CLASSROOMS

Primary Classrooms. 22

Middle Grades 23

Upper Grades. 25

IV. OTHER INSTRUCTIONAL AREAS

Special Education 27

Corrective Reading. 35

Music Facilities. 36

TV Classroom. 38

PAGE

Library 43

Physical Education Facilities 46

V. UTILITY AREAS

Lunchroom 51

Restroom Facilities 56

Custodial Area. 59

Lighting. 61

VI. SCHOOL SITE 65

ACKNOWLEDGEMENT 69

PHILOSOPHY

The home, church, fire house, fields, streets, pets, people, and the school are the environment of our children. Each educates and influences the child who is driven by the dynamics of the way he develops and grows.

In this plastic and everchanging shape the child enters school which is the social institution that proposes to instruct him systematically in the heritage, resources, ways, and possibilities of society and assists him in becoming the person that he potentially can be.

The school is a children's community. The world is recreated by word, model, number, and deed so that children may enter the community and the world, not merely to survive but to contribute also. With our interest in children, we cannot lose sight of childhood or the goal of creative adult life in the world.

The school is also concerned with development of the whole child. Today many think the primary task of the public school is to nurture intellectual development to the exclusion of the other aspects of growth. The school must exert enormous influence on the child in all areas of development. The contribution to child development is enhanced through the cooperation of parents and teachers. This cooperation, if it is to become meaningful, must be on a basis of real concern for the education of the child. It cannot be a simple reporting of grades on a report card. The reporting of teachers to parents can become a communication in which parents and teachers share insights which will make the learning process more acceptable and meaningful to the child.

Ideas are weapons that do not exist in the void, separated from the purposes and survival of the culture. This is true in every culture among all races as ideas come out of life and are the compliments of purposing, striving, and hoping.

When ideas come from a person who purposes and strives to do good, they beocme instruments for a creative selfhood, for glorifying and magnifying the ethical and moral, and for advancement by the intelligent and the wise.

Each child has his own pattern and rate of growth. No two children grow and learn at the same rate. They do not crawl, walk, or talk at the same chronological age. Even though adults know this they seem to expect all children to learn to read at the same age.

Phychological research does not support the contention that all children of identical chronological age are able to accomplish the same things in the same way with the same degree of facility. Studies and research show that the rate of growth

for each child may vary from rapid to slow, but growth is continuous.

While no educator will agree that any program is the answer, the Levels or Continuous Progress Program which is being developed in the Jefferson County Schools is an attempt toward an organizational pattern which may assist in doing a better job of meeting individual needs of children and their problems. This program recognizes the individual patterns of growth, and provides for differences: academic, physical, social, and emotional. There will be no repetition, but continuous growth. While this program is based upon reading, growth in other areas must be considered and evaluated.

Out of the philosophies of education expressed by voters and thinkers, experiences of schools in meeting or failing to meet the problems that children face, and findings by specialists about how children grow and develop comes a generalization of what education in the elementary school is like today.

PART I

GENERAL INFORMATION

SCHOOL PLANNING

Inspired planning recognizes the dynamics of change. Educational planning of school buildings will improve only to the extent that they are interwoven with and made a part of the fabric of our whole culture. With a burgeoning population and expanding economy, we find many deserving but conflicting interests all competing for money, talent, and space. The requirements of education will be better understood and satisfied when they are seen in perspective, properly fitted into the whole picture.

"When it is considered that more than five-sixths of all the children in the state spend a considerable portion of the most impressionable period of their lives in the schoolhouse, the general condition of those buildings and their influences on the young stand forth at once as topics of prominence and magnitude. The construction of schoolhouses connects itself closely with the love of study, proficiency, health, anatomical formation, and length of life. It is believed that, in some particulars, their structure can be improved without the slightest additional expense, and that in other respects, a small advance in cost would be returned a thousandfold in the improvement of those habits, tastes and sentiments which are so soon to be developed into public manners, institutions, and laws to become unchangeable history." This is quoted from one of the most influential books on schoolhouses ever written.

In these days of unprecedented need for planning and constructing new school plants, there is a persistent demand from the general public for economy. Much has been written about specific building features to which economy is attributed and almost as much about features which might, theoretically, reduce costs of school plants. At the same time, educators warn repeatedly against "false" economies; although, few have ventured to state what is "false". While no single economy measure seems likely to make a great reduction in the costs of school plants, there are, literally, hundreds of little savings available to school planners which, taken together, can effect substantial savings in a building program without jeopardizing the educational program. Technological advances are making it possible for us to do better work and to do it more efficiently in building school buildings today.

Educational facilities are no longer merely a school building and its grounds but the space within a building is planned for what will be taught in it and how it will be taught. Every space in a school building finds its justification in the contribution it makes to the all-round development of the students it houses. The same reasoning applies to the engineering facilities. . .adequate lighting, sound control, mechanical heating and ventilation, and now air conditioning are justified solely on the effect the resulting conditions have on the students and teachers.

Economy in the schools is not cramming more children into smaller rooms; is not ignoring maintenance to afford space; and is not ignoring modern heating, ventilating, lighting, and acoustics to afford more space. Economy is efficiency of space use, total usable space, and multiple usable space. In planning the architects should afford minimum but adequate circulation area and near minimum building perimeter, but with maximum usable and multiple use spaces, all compatible with the school system's total educational philosophy.

In intelligent planning we must recognize that efficiency and cost factors are but two of the many elements in the dimensions of planning school buildings. Unless art, a third element, is permitted to shine through to give form, color, texture, motion, rhythm, and purpose, planning is hollow and meaningless and does not express the full depth of our culture.

To keep pace with its changing responsibilities, education today needs school building interiors that are both functional and flexible to provide for varied grouping and a wide choice of activities. The school influences physical growth, intellectual development, social functioning, character training, and emotional adjustment to life to a varied degree for all of the students in the school. The schools we are building will house several generations of students. As we design and plan these buildings, we should keep in mind what kind of educational programs we should have in them and what kind of facilities and equipment they are to house.

In keeping with the flexible grouping requirements of the modern school curriculum, depending upon the grade-level and child development-level, a classroom interior accommodates different amounts and arrangement of furniture and equipment. The modern classroom interior makes provision for this by including such aids as movable furniture, teaching units, a more intensive use of vertical teaching surfaces, and functional space dividers which assist the thoughtful teacher in her varied programs of instruction. A higher degree of space utilization will make the school plant an economical one.

It is superfluous to propose a new shape for classrooms under the guise of making them flexible. The basic idea is valid that the most truly flexible classrooms are rooms in which the floor area can be increased or decreased as the nature of the classroom activity requires. Such classrooms can be readily divided into smaller rooms or spaces for groups of 10, 20, 50, 100, or more. Demountable or folding partitions are used to create these smaller rooms or spaces within the original classrooms. More completely flexible classrooms are becoming practical realities.

New instructional methods and flexible room arrangements will make it possible to subdivide auditoriums and other large general purpose areas into instructional areas of various sizes for both small and large groups, and thereby increase the use of these spaces by as much as 90 percent. Hand-in-hand with large and small group instruction goes the new concept of team teaching on the elementary level. It is necessary that we provide working space for the "team," preferable close to their area of operation. There is at present a strong trend to provide triangular or pie-shaped spaces for classrooms and other group activities, but odd shapes and forms should not be accepted unless they seem sensible and practical for the school program being considered.

In general, continuing changes in educational theory and practice provide a need for buildings which can respond to these changes. A flexible school can accommodate a conventional program but the reverse is not true. If the school buildings are not to be outdated before they are built, they must have a built-in capacity for change.

The size of the elementary school is dependent upon a number of factors, but generally, they should be large enough to make an economical operating unit. In order to have an office staff, elementary library, lunchroom staff, full-time custodian, and multi-purpose facilities, there should be enough classrooms and students to balance out these facilities. The elementary school should contain about 24 classrooms for grades one through six and accommodate about 700 to 750 students to fully utilize the above personnel and facilities. The minimum number of classrooms should be about 20, accommodating about 600 students. This building can be expanded with a four or eight room addition at a later date if needed. Elementary school buildings should be master-planned to allow for maximum expansion, and additions should blend with the original design. Too many rooms added will throw the fixed features: library, lunchroom, and central restrooms out of balance with the total school.

The planning committee for selecting and organizing the material for this manual was chosen from a cross-section of elementary school personnel with considerable amount of experience in elementary school work. An Elementary school principal was chosen as chairman of the committee. The various grades and the library were also represented on the committee.

The planning committee held the preliminary meeting, did research work, and conducted interviews with other school personnel to secure information for compiling this manual for constructing new elementary schools.

The elementary planning committee consisted of the following members:

Chairman:	Miss Ida Nell Tabor
Secretary:	Mrs. Aline Warren
Members:	Mr. Aaron Farmer
	Mrs. Rebecca Coyle
	Miss Alice Klump
	Mrs. Susan Kersey

EDUCATIONAL OBJECTIVES AND CURRICULUM

Man has suddenly acquired great stores of knowledge with which he can either destroy himself or establish unprecedented happiness. Deliberate self-destruction may not seem plausible. However, unless man learns to use his new knowledge for the benefit of all mankind, the possibility remains.

Explosive accumulation of knowledge and the universal need to understand how it can best be used demand that we re-examine the goals, the curriculum and teaching methods of every elementary school. Such examination reveals that what is needed is not a change in the goals of elementary schools, but a change in (1) the emphasis placed on these goals, and (2) the methods and materials used to attain them.

Faced with the impossibility of teaching everything that is known, the elementary school of modern times must concentrate on those particular subject areas which best meet the needs of tomorrow's citizens. It should develop in students a true appreciation of our society, of other societies and cultures, of the physical world and of rational thought.

The school of tomorrow must place increased emphasis on developing the individual potential of each child to the fullest extent possible. It is essential that this goal be attained for a democracy can no longer afford the luxury of waste or neglect of the abilities of any citizen, however meager or great those abilities may be.

The educational objective of the elementary school should be to develop the whole child by allowing each one to be taught in accordance with his own needs, capacities, and rate of growth and to progress continuously with a feeling of success, without a feeling of failure in needless repetition. In order to achieve this an attempt is made to develop a program that will appeal to the child. The school needs to arouse in the child a willingness to learn and to satisfy his innate curiosity. Educators since the beginning of time have attempted to harness the innate curiosity of children.

The student must acquire the proper tools for communication, thinking, comprehending, assimilating, and relationships with children of his own age. Their learning experiences should be related to their physical, mental, social, and emotional development. There should be a close relationship between the school and the home so that each can reinforce the learnings fostered by the other.

The usual objectives of the elementary school curriculum should be the development of the basic skills: reading, writing, and arithmetic, as well as development of expression, creative talents, physical development, and appreciation of art, music, and his heritage of democratic values. The progression from

the primary level find carefully planned expansion of fundamental skills and activities. Also, the student develops knowledge and understanding of social studies, the physical world, and the life processes around him. Avenues of communication now become openly available as the curriculum advances according to the developmental status of the pupils. This expansion involves communication outside of reading, including the extended use of audio-visual aids, art, and a wide variety of construction activities.

Increasing scientific insight into the nature of learning processes show that knowledge is not a thing apart from behavior itself. Research in child development and in the nature of the educative process is giving deeper and clearer meanings to the expressions, "the whole child," "learning through activity," "symmetrical growth," "pupil purposes," "teacher-pupil planning," and the "inseparability of child and environment."

During the brief generation in which cultural changes have been taking place at an ever accelerating rate, the field of education has been undergoing significant developments and change. Emphasis on teaching has shifted from programs in which children were taught principally about the past to a program teaching the children about the past, the present, and the future. Subjects taught-in-isolation have been replaced with correlations of content. The old "assign-study-recite-test" method of instruction im many subjects is rapidly giving way to "Learning-by-doing."

Children develop their potentials as the result of their experiences. Through this interaction with their environment children grow and build their concepts, skills, and attitudes. The program takes all children into account and values the ideas, skills, and products of each child as being worthy.

SOCIAL STUDIES

Since the child lives in a social world, his program should emphasize understandings and skills in getting along with many kinds of children--in sharing, taking turns, and learning to hold his own with his peers. The contents is in the experiences children have and deals with problems pertaining to the home, school, and expanding community. Each child thus engages in many different activities in which he takes responsibility as well as shares it.

The organization of his learning is often made through painting, dramatic play, experience charts, or discussions. Other types of acitivity used for this pupose consists of making layouts and models. This phase of the program places certain demands on the school facilities.

SCIENCE

Young children's concern with their physical and natural environment makes experiences in exploring, manipulating, investigating, and discovering an important phase of their program. Since they perceive their world with all their senses, it is fundamental that they have experiences in touching, manipulating, observing, smelling, and listening. Such experiences are meaningful because they illustrate orderly methods of working and represent scientific approaches to learning and problem solving.

Space and materials, therefore, are needed for working and experimenting, which may include such activities as planting and watching things grow and observing and caring for animals at school. Children experiment with water, soil, magnets, and weather instruments and work with simple machines, toys, and garden tools. The school plant and grounds should thus be planned as laboratories for scientific and creative learning.

NUMBER AND SPACE RELATIONSHIPS

Children deal with quantity and space because these are realities in all their undertakings. They count objects and people, group and regroup things together, and measure or estimate sizes and the space with which they are dealing. These activities are the bases for acquiring concepts of number relationships involving size, shape, and quantity. Before children are ready to work with symbols, they need to work with objects and materials for counting, grouping, and measuring.

LANGUAGE

The child's language development grows out of his own firsthand experiences. It develops as a part of the child's total experience as he listens and talks to someone while engaging in an activity. Later on, reading and writing are vital parts of many of his undertakings.

LISTENING AND SPEAKING

The child at school develops further sensitivity and appreciation for the sounds about him. He enjoys experiences with poetry, music, and stories and learns to listen thoughtfully to conversation and discussions. He participates in dramatic play, storytelling, talking about his experiences, and later makes short reports and explanations to his group.

READING AND WRITING

When they have developed the maturity for this task, children begin to read. They begin reading from large experience charts, labels, captions, and lists. Later they go on to both texts and supplementary books. Since young children have varying reading interests and needs, the materials, too, vary in type and use. Thus the environment which best stimulates reading interests and abilities is a flexible one.

Again, when they have acquired sufficient maturity and have a need to communicate in this way, children begin to write. First, they use the chalk board and large size paper. Crayons, brushes, and pencils are correspondingly large. As children's coordination increases, both reading and writing skills become refined, and the size of print and materials can be reduced.

ART EXPERIENCES

Children express their feelings and ideas in many ways--through rhythms, sounds, colors, and touch--by dancing, singing, and making things. Since the school nurtures the child's urge to create, they better understand themselves and their own experiences through these creative forms of expression.

PLAY AND PHYSICAL EDUCATION

Since children are active, developing personalities, the school's program is designed to promote their growth, health, and safety. It includes play and other physical activities--both indoor and out--involving climbing, running, jumping, balancing, lifting, and bending. The proper equipment and space are essential for these activities involving movements which are so fundamental to the development of coordination, poise, and a sense of confidence in the child.

INSTRUCTIONS TO ARCHITECTS

GENERAL INSTRUCTIONS:

The primary purpose of the architect is to create the house of education to control and furnish the educational environment after the owner informs him what he plans to do in it. Most architects who serve education have a fair knowledge of educational processes. However, they cannot be expected to keep currently informed on curriculum requirements, new developments in teaching and learning theories, on the many areas of pupil-teacher relationships, and the organization and relationship of the administrative, counseling, and service personnel.

Three out of four members on the National Council for Schoolhouse Construction stated that school authorities did not furnish the architect with adequate educational specifications for designing new schools. An authority on school planning and construction estimates that at present only five percent of new schools are being built and equipped according to a complete set of educational specifications. Architects do need this kind of assistance and direction from the school administration.

The school administration, by providing the educational specifications, documents the scope and purpose of the school which will give the community the greatest service. The architect puts the school in tangible form so the community can use what it bought.

Today the modern schools need to be more functional than at any time in the past. After the size of a new building has been determined, the next point of importance is the interior arrangement. The school building must be planned without any frills or unnecessary expense that does not add to convenience, comfort, or quality teaching. The philosophy of constructing functional educational plants and not just knowledge dispensories is to make every enclosed square foot or cubic foot of space a productive one. All horizontal space should be corridors, aisles, and students or teachers working spaces. The vertical wall space should be taken up with doors, bulletin boards, chalk boards, cabinets, and windows. There should be as few as possible of dead or non-functioning spaces in an economical and efficiently planned school building.

There must be proper balance between the number of classrooms, toilet facilities, lunchroom facilities and the heating plant. The modern constructed building should have mechanical heating and ventilation, proper lighting to give the proper candle power recommended for each area, and ample chalk board that give the greatest contrast at classroom distance. There must be bulletin board for stimulating, promotional, and exhibitional displays by both teacher and students. There should

be cabinets for storage and sink facilities in applied arts, practical arts, special education, and any other area where water adds to the instructional program.

The buildings must be made as safe as possible. They should be constructed of materials that are almost fire-proof throughout. The greatest of safety is built in the steps, hallways, and doors, with some provision being made for the physically handicapped with ramps and special toilet facilities. A child may be spending the safest six to seven hours of its wake period at school.

The pressures for greater utilization of the plant have resulted in a trend toward the installation of air conditioning systems. Some school boards have decided that all new buildings should either be equipped with or be designed for future installation of air conditioning. We may find within a short time that ducts and other equipment now thought to be necessary are no longer needed to air condition a building.

It is fairly certain, however, that insulation will continue to be important in both air conditioning and heating. The extended use of air conditioning has encouraged other design trends such as: lower ceiling, less glass area, and more compact units through reduction of corridor space.

The instructions, procedures, requirements, and specifications contained in this publication and supplemental drawings are to be followed, where applicable, by architects preparing drawings and specifications and supervising construction for the Jefferson County Board of Education, hereinafter referred to as "Owner." Any changes or deviations must be requested in writing by the Owner.

A. ARCHITECT'S PLANNING:

1. When an Architect is assigned a project, he will be informed of the budget tentatively established by the Board of Education for construction. This budget shall be considered confidential.

2. After instructions from the Board of Education as to the new building needs, the Architect will submit rough sketches to Owner to determine general layout, relationship of units to each other, approximate square footage in each area, location on site, driveways, walks, play areas, and other site facilities, including sewage disposal. An estimate of the cost of the project, efficiency factors, and other pertinent information will be submitted along with the preliminary plans to the Board of Education for preliminary approval.

3. On the basis of topographical surveys and other data available from various sources, Architects shall ascertain all characteristics of the site on which a building is to be built and notify the Owner of any conditions which will adversely affect the construction of the building.

4. No building is to be built over any sewer or water lines or other utilities as shown on the topographical surveys.

5. When Staff and Board of Education approval have been given on rough sketches, the Architect will proceed to prepare a preliminary floor plan at 1/16" or 1/8" scale for the general plans and 1/4" scale for technical areas. Three copies of same along with B.G. Forms 2 and 3 completed will be sent to the Department of New Buildings and Grounds at the Central Administrative Office.

6. If an Architect is informed that future additions are to be added to the building, he shall show as part of his original site plan a proposed layout for these additions as instructed by the Owner.

7. The Architect will also submit a copy of preliminary plans and specifications to both the local Health Department and State Fire Marshal for approval.

8. The Department of New Buildings will check the preliminary plans, execute B.G. Form 1, and secure a fee simple title to property. All forms and plans will be forwarded at the same time to the State Department of Education for approval.

9. Working drawings will be started only after preliminary sketches have been approved by the State Department of Education.

10. Architect must work closely with Owner during the development of working plans and specifications to be sure that the building contains the features and arrangement required for each building.

11. The Department of Instruction is responsible for submitting a program of instruction for a new school to the Department of New Buildings for forwarding to the State Department of Education or to submit it directly to the State Department of Education prior to approval of final plans.

12. The Architect will plan the general construction, electrical, plumbing and heating, and site construction to be taken on separate bids. Chalk and tack boards will be in the general contract,

but science and art cabinets, kitchen equipment, refrigeration, stage curtains, built-in wardrobes, sink cabinets, and bleachers in the gymnasium will each be taken on separate bids or a combination of bids.

13. The Board of Education specifically instructs Architects not to develop plans and specifications which can be considered "closed." Where a trade name is used to specify quality, care should be taken to assure that brands of equal quality receive every consideration. It is recognized that specifications generally should contain an adequate description of the material to permit bidding rather than to specify brand names or to write specifications around a specific item to exclude others. It is understood, however, that brand names are sometimes necessary.

14. All specifications shall be written to permit the Owner to supply and have installed by another Contractor certain items of furniture which are not included in the general contract.

B. <u>TAKING BIDS:</u>

1. The Architect will set an approximate date that the plans will be ready to go out for bids and notify the Department of New Buildings and Grounds who will follow through on the legal requirements for taking bids, advertising in local paper, etc.

2. The Architect will be responsible for placing a copy of the working drawings, detailed specifications, and other information in the hands of prospective bidders.

3. The Architect is responsible for announcing the bid date and executing all the preliminary forms with contractors prior to the bid date.

4. The Architect is responsible for sending out all addenda to all prospective bidders and receiving acknowledgement of same.

5. Bids will be opened by the Architect who will be assisted by the Department of New Buildings and Grounds. The Director of Business Affairs should be present.

6. The Architect will be responsible for deciding the successful bidders in each category which is based primarily on the responsible low bidders.

7. The Architect will be responsible for executing the completed contract and forwarding it to the Department of Finance and eventually to the Department of New Buildings and Grounds for filing and reference use.

8. The Department of New Buildings will compile the bids and forward the results, indicating the successful bidders, to the State Department of Education for final approval. Copies will be sent to other staff personnel.

9. The Department of Finance will secure financial approval from the State Department of Education for construction of the building.

C. CONSTRUCTION:

1. Architect must provide adequate supervision for this construction. He must work with mechanical, electrical, structural engineers, and others to determine that all services are properly coordinated.

2. All change orders will be issued by the Architect but must be processed by the same procedure as the plans.

3. All contractors will pay the state wages for each skill and carry authorized bonded insurance.

4. Materials which are economical initially and have a low upkeep will be used.

5. Design must be kept simple, clean, and straight lined. Design capacity will be maximum.

6. The elementary school should contain a heating plant, lunchroom facilities, approximately 24 instructional units, a library, and other general areas with a capacity for about 720 pupils.

7. The original unit of the high school should contain about 40 instructional units for about 1,000 pupils, counting the large TV room which has the capacity of about six normal instructional units.

8. Buildings will normally be one or two story for elementary schools and two and three story for junior high and senior high schools.

9. The Architect will design his project so that it will qualify for the lowest possible insurance rate. Materials and design shall be weighed against considerations of economy, ease of maintenance, appearance, and function.

19. Generally the addition to a building will follow the design of the existing building and the outline should be shown on the original plans.

D. BUILDING INSPECTION:

1. Periodic Checks - Checks will be made during the construction by Department of New Buildings and the Architect to determine the progress of the construction of the building.

2. Preliminary Inspection - When the building is completed, the Contractor, Architect, and the New Building Coordinator will check the building and compile a list of deficiencies.

3. Final Inspection - Following the correction of the deficiencies, a final inspection will be made by the same parties.

4. Periodic Inspection -

   a. Since the Contractor is obligated for the proper functioning of equipment in a building for a period of one year following the acceptance by the Board of Education, it shall be the Architect's responsibility to make periodic checks with and without the Owner to ascertain that all equipment and all materials are in proper condition.

   b. Prior to the expiration of the year's period a final and complete inspection shall again be made by the Architect, Contractor, and Owner to determine those defects which are the responsibility of the Contractor and which should be corrected according to the terms of the agreement between the Board of Education and the Contractor.

5. Correction of Defects - During the period that the year's guaranty is in effect, the Board's representative will notify the Architect on the Blue Form directly of any defects that occur. The Architect will notify the General Contractor or a subcontractor to correct them and will also return a corrected copy of the report to the Department of New Buildings.

6. Roof Bonds - A copy of roof warranty bonds and other permanent papers will be sent to the Department of New Buildings for filing for future use by the Board of Education.

7. Instructions and Parts Lists - Architects are requested to take special precautions to collect all operating instructions and parts lists for the mechanical equipment and to present them to the Owner at the time the building is completed.

PART II

OFFICE AREA

ELEMENTARY OFFICES

The elementary office area should serve as the administrative headquarters for all administrative action, secretarial services, communications, conferences, office for visiting teachers, teachers work center, school health center, and the center for community activities. The office area should be designed for efficient use of spaces and operation of the school. The furniture and equipment must reflect a business character and contribute to maximum function of the area.

Offices should provide necessary privacy for various administrative personnel while giving ready access to records and supplies. Personnel should be able to work without interruption by persons in the outer office. Administrators should be able to see and be seen from the general office. The storage and other service areas should be directly accessible from the clerks area.

LOCATION:

It should be located on the ground floor at the main entrance to the building where it will be obvious and accessible for the first time visitor. The arrangement of the facilities sets the tone of the entire school plant for pupils, teachers, classified personnel, and the general public.

GENERAL OFFICE

The general office includes working space for the school clerk, waiting and reception room, and space for storage. The office work space should not be separated from the reception area, except for the counter.

LOCATION:

It should be centrally located for entrance by students from the classroom area and for visitors entering from the parking lot.

SIZE:

10' x 25' or 250 square feet

BUILT-IN EQUIPMENT:

1. 1 - Outside phone
2. 1 - Intercom phone sound system
3. 1 - Program clock
4. Electrical outlets for secretarial desk
5. Teachers' mailboxes, 28 single, 2 double
6. Tack board - 3' x 6', near teachers' mailboxes
7. Counter - two levels
8. Window for observation of health room

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Secretarial desk
2. 1 - Secretarial chair
3. 1 - Typewriter, manual
4. 1 - File cabinet, 4 drawer, without lock
5. 1 - Kardex file, 16 slides (optional)
6. 1 - Adding machine
7. 4 - All purpose chairs, 17"
8. 1 - Bookcase, 36" x 36"

PRINCIPAL'S OFFICE

LOCATION:

It should be located near the front of the administration area with access to the general office, corridor, and the outside if possible. The principal should have vision of the loading and unloading of the buses and the front parking area.

SIZE:

12' x 18' or 200 square feet

BUILT-IN EQUIPMENT:

1. 1 - Outside phone
2. Intercom phone system from offices to console - locate near student entrance to office
3. Tack board - 3' x 6', near entrance to general office
4. 1 - Wardrobe closet, 2' x 3', with storage facilities

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Executive desk, 34" x 60"
2. 1 - Swivel chair
3. 1 - File cabinet, two drawer, without lock
4. 1 - Table, 30" x 60"
5. 4 - All purpose chairs, 17"
6. 1 - Bookcase, 48" x 60" x 9"

CONFERENCE ROOM

LOCATION:

It should be located at the rear of and in close proximity to the principal and office clerk.

SIZE:

12' x 16'

BUILT-IN EQUIPMENT:

1. Chalk board - 4' x 8', located near the door
2. Telephone outlet

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Table, 30" x 72", adjustable height
2. 6 - All purpose chairs, 17"

MIMEOGRAPH ROOM

LOCATION:

It should be located near the clerk with hallway entrance from corridor and also an entrance from general office.

SIZE:

8' x 14' - This room could be smaller if made a part of a teachers lounge with an office entrance.

BUILT-IN EQUIPMENT:

1. 1 - Work counter with sink and cabinet
2. Metal shelving - 12" x 36" x 87"

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Storage cabinet
2. 1 - Spirit duplicator

BOOKSTORE

LOCATION:

It should be located between general office and the corridor, with a door from the general office and a window opening into corridor.

SIZE:

6' x 8'

BUILT-IN EQUIPMENT:

1. Shelving on one side and end for supplies
2. Dutch door or sliding window

HEALTH ROOM

LOCATION:

It should be located at the rear corner of the general office.

SIZE:

10' x 11' with 4'6" x 5' toilet room

BUILT-IN EQUIPMENT:

1. 1 - Sink
2. 1 - Commode

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Scale
2. 2 - Cots
3. 2 - Mattresses
4. 1 - First aid cabinet

VAULT

LOCATION:

It should be located at the rear of the general office opposite the entrance door so it will be visible from the hallway with the door opening from the general office.

SIZE:

6' x 9'

BUILT-IN EQUIPMENT:

1. Combination lock on door
2. Built-in shelving on both sides
3. Key case - 96 key capacity

TEACHERS' LOUNGE AND WORK ROOM

In addition to the versatile classroom space, the elementary school should contain a combination lounge and work room for teachers. This room, along with the library and central storage area, make the work center of the school highly functional. It may include the mimeograph room of the office area.

LOCATION:

It should be located between the office area and the classrooms.

SIZE:

Approximately 275 feet in a L or T shape entering from the hallway and office.

BUILT-IN EQUIPMENT:

1. Work cabinet with counter top and sink
2. Typewriter counter 26" high
3. Three sections of offset storage shelving

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Work table, 30" x 72"
2. 1 - Mimeograph machine
3. 1 - Spirit duplicator
4. 1 - Typewriter, manual
5. 1 - Adding machine
6. 1 - Metal storage cabinet

PART III

STANDARD CLASSROOMS

STANDARD CLASSROOMS

The instructional centers are sized to accommodate the activities associated with normal-size classes or pupil groups where modern learning procedures are used. All centers have the required amount of natural lighting and a fluorescent lighting system furnishing amounts of light calculated on lighting code standards, acoustically treated ceiling, asbestos tile floors, along with a carefully coordinated wall finish color harmony to create very comfortable environments for work, study, and instruction.

The popularity of planning is usually enhanced by the active attention given to the education climate that prevails and more so to that desired. The classroom, ideally, is a large, open work area which is enclosed and heated, or cooled, for protection against the elements. This area is suitably serviced with materials necessary in the educational process, provided with ample storage space, and cares for the personal hygiene needs of the students.

The classrooms may be located on one floor or two floors. The primary grades should be located in one wing or one floor and the intermediate and upper grades should be in a separate wing or separate floor.

PRIMARY CLASSROOMS

The primary grades consist of grades one and two which have common requirements for instruction, health facilities, and play.

LOCATION:

The primary classrooms should be located in one wing and preferably on the first floor of a two story building.

SIZE:

About 800 square feet with a minimum width of at least 22' and a ceiling height of 9' clear at the lowest point.

BUILT-IN EQUIPMENT:

1. Chalk board - 16' on front wall for class use and 8' on rear wall for reading group
2. Map and chart rails over the chalk board

3. Tack board - 16' on side wall

4. Work cabinet with sink

5. Drinking fountain on cabinet sink

6. 1 - Combination teacher's cabinet, 66" wide x 66" high x 15" deep for storage and bookcase

7. 2 - Wardrobe cabinets with or without tack board on back

8. Two-way public address system

9. Unit ventilator for ventilating and heating with bookcase on both ends

10. General purpose window shades

11. 40 foot-candle power in fluorescent lighting at desk height, placed in four rows with two switches

12. 1 - Wall clock

13. Self-contained restroom with commode and lavatory

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal

2. 1 - All purpose chair, 17"

3. 32 - Universal desks, size C

4. 1 - Table, 30" x 72", adjustable

5. 12 - Reading chairs, 13"

6. 1 - Double-faced easel

MIDDLE GRADES

The middle grades consist of grades three and four which have more in common with the upper grades such as TV sets in the rooms, wider use of the library, separate restroom facilities, and more team games during play.

LOCATION:

The classes should be located in the major academic wing nearest the library. If housed in a two story building, place

on the floor with public restrooms. The third grade can occupy the same floor as the primary grades but may not have built in restrooms if there is ample common restrooms.

SIZE:

About 800 square feet with a minimum width of at least 22' and a ceiling height of 9' clear at the lowest point.

BUILT-IN EQUIPMENT:

1. Chalk board - 16' on front wall for class use and 8' on rear wall for reading group
2. Map and chart rails over the chalk board
3. Tack board - 16' on side wall
4. Work cabinet with sink
5. 1 - Combination teacher's cabinet, 66" wide x 66" high x 15" deep for storage and bookcase
6. 2 - Wardrobe cabinets with or without tack board on back
7. Two-way public address system
8. Unit ventilator for ventilating and heating with bookcase on both ends
9. General purpose window shades
10. 40 foot-candle power in fluorescent lighting at desk height, placed in four rows with two switches
11. 1 - Wall clock

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal
2. 1 - All purpose chair, 17"
3. 32 - Universal desks, size B
4. 1 - Table, 30" x 72", adjustable
5. 12 - Reading chairs, 15"
6. 1 - Double-faced easel

UPPER GRADES

The upper grades consists of grades five and six.

LOCATION:

It should be located in the academic wing of the building nearest the library.

SIZE:

About 800 square feet with a minimum width of at least 22' and a ceiling height of 9' clear at the lowest point.

BUILT-IN EQUIPMENT:

1. Chalk board - 24' on front wall
2. Map and chart rails over the chalk board
3. Tack board - 24' on side wall
4. Work cabinet with sink
5. 1 - Combination teacher's cabinet, 66" wide x 66" high x 15" deep for storage and bookcase
6. 2 - Wardrobe cabinets with or without tack board on back
7. Two-way public address system
8. Unit ventilator for ventilating and heating with bookcases on both ends
9. General purpose window shades
10. 40 foot-candle power in fluorescent lighting at desk height, placed in four rows with two switches
11. 1 - Wall clock

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal
2. 1 - All purpose chair, 17"
3. 32 - Universal desks, size A

4. 1 - Table, 30" x 72", adjustable
5. 6 - Reading chairs, 17"
6. 1 - Double-faced easels

PART IV

OTHER INSTRUCTIONAL AREAS

SPECIAL EDUCATION

Modern teaching of retarded children is a discipline which dates back not much more than 30 years. Designing of community day schools for these children is just as recent an endeavor, but to build along the lines of scientific investigation of these children's needs is actually a new development. Much of this is still rather empirical, experimental, and tentative.

On the other hand, many features of these new schools will be the same in schools for normal children because retarded children are more similar than dissimilar to normal children.

This problem is particularly grave in the case of schools for the retarded because of lack of precedent. It is the most challenging task of not only analyzing new educational methods in terms of practical requirements but also translating these requirements into terms of successful architecture. The educable and trainable students which were previously housed where space was available should be given prime consideration in the construction of a new school plant.

The special education rooms are specially appointed for individual and small group activities in accordance with the needs presented by each pupil. A small room designated as the speech and reading center is an advance feature in school planning. Pupils with speech and hearing defects receive special instruction here, as do also those with marked reading deficiencies. These facilities provide rightful and sympathetic opportunities to children needing additional help in educational accomplishment and general development.

A school system should designate a center for these special education classes to serve the students from several schools. When a new school is constructed that will serve as a center for one of the special education classes, it should be centrally located for the schools it is to serve. Pupils will be transported usually by the parents to all the centers except for the educable classes. The educable classes should be located near a high school so that transportation can be provided from several elementary schools as for the high school.

Special education is conducted on an ungraded basis, initiating the individual and group instruction program at the level where the students are in their learning processes. The curriculum is based on a mild liberal arts education, communication training, nature study, and creative arts and crafts work for appreciation and creative expression. The curriculum is specifically planned to develop skills and attitudes which are fundamental to the proper social and economic adjustment of the children. Many students

remain in the elementary school for grades one through six to age 13 in the special education program for the educable classes. The other classes will vary considerably.

PHYSICALLY HANDICAPPED

A school with physically handicapped facilities should serve as a center for a number of schools.

LOCATION:

Classrooms should be on first floor near entrance with an easy ramp provided.

SIZE:

Classrooms at least as large as for a regular group of non-handicapped children are needed - about 750 square feet.

BUILT-IN EQUIPMENT:

1. 1 - Teacher's cabinet, combination, 66" wide x 66" high x 15" deep for storage and bookcase
2. 2 - Students' wardrobes
3. Cabinet sink with hot and cold water
4. Chalk board - 16' on front wall
5. Tack board - 16' on side wall
6. Special toilet facility
7. Drinking fountain, proper height
8. Physical therapy or rest facility should be easily accessible for children with crutches or wheelchairs.
9. Special hardware and handrails placed at chalk board and toilet facilities.
10. Standing tables - single and multiple with adjustable standing boxes

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal

2. 1 - All purpose chair, 17"

3. 1 - Table, 30" x 72"

4. 10 - Two place tables, 30" x 60", with book boxes

5. 10 - Chairs

6. 1 - Metal storage cabinet

7. 2 - Easels, adjustable height to provide leg room for seated children with braces

8. Special chairs for individual needs

9. Table with hole cut in middle

10. Boards that can be placed over the arms of chairs

11. Bookcases

HEARING HANDICAPPED

LOCATION:

It should be located in the quiet wing of the building. Locate on side of building for maximum light to reduce glare for speech (lip) reading.

SIZE:

Regular size classroom - 750 square feet

BUILT-IN EQUIPMENT:

1. 1 - Combination teacher's cabinet, 66" wide x 66" high x 15" deep for storage and bookcase

2. Chalk board - 16' on front wall

3. Tack board - 16' on side wall

4. 50 foot-candles of artifical light properly diffused

5. A "red-flasher" rather than a sound gong for fire warning

6. Numerous electrical outlets well situated around the room to accommodate special equipment

7. Ample storage space for special equipment and materials

8. Cabinet sink with hot and cold water

9. 1 - Student wardrobe

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal

2. 1 - All purpose chair, 17"

3. 1 - Table, 30" x 72"

4. 10 to 20 - Individual seats

5. Auditory trainers built in a horse like structure - this includes a control station with turntable for records

SPEECH CORRECTION

LOCATION:

It should be in the academic area of the school.

SIZE:

It should be about 350 square feet to accommodate eight to ten students per class.

BUILT-IN EQUIPMENT:

1. Chalk board - 8' on front wall

2. Tack board - 8' on front wall

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal

2. 1 - All purpose chair, 17"

3. 3 - Tables, 30" x 60"

4. 6 to 8 - Chairs, 15"

5. 1 - Bookcase, 36" x 9"

6. 1 - Metal storage cabinet

7. 1 - File cabinet, 2 drawer, letter size

EDUCABLE MENTALLY HANDICAPPED

The educable mentally handicapped children should not be segregated from the other school children. They should utilize as many of the special areas for the regular school as possible and participate in all school activities. One school should serve as a center for one or more elementary schools.

LOCATION:

It should be located near the creative arts area of the school building.

SIZE:

Regular classroom size - 750 square feet to accommodate 15 to 20 students.

BUILT-IN EQUIPMENT:

1. 1 - Combination teacher's cabinet, 66" high x 66" high x 15" deep for storage and bookcase
2. Chalk board - 16' on front wall
3. Tack board - 16' on side wall
4. Cabinet wink with hot and cold water
5. Additional electrical outlets
6. Two sections metal shelving, offset type

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal
2. 1 - All purpose chair, 17"
3. 2 - Tables, 30" x 72"
4. 2 - Art tables, 36" x 60"
5. 8 - Chairs
6. 15 to 20 - Universal desks
7. 2 - Metal storage cabinets

8. 1 - Work bench with 2 vises, tools, and tool rack
9. 1 - Sewing machine, electric
10. 1 - Loom
11. Hot plate
12. 1 - File cabinet, 2 drawer, letter size
13. Iron and ironing board

TRAINABLE MENTALLY HANDICAPPED

Many school systems have one center containing one or more units for the trainable classes. According to some experts in the field of special education, trainable students should be isolated from other pupils. Consequently, this area should be a self-contained unit. This component has its own outside recreational-play area, kitchen, separate storage area, and lavatories.

LOCATION:

It should be located out on the end of the wing of the building or in a separate wing or building to itself.

SIZE:

This area should contain 800 to 1,000 square feet if self-contained with all facilities. It should be large enough for 12 to 15 students.

BUILT-IN EQUIPMENT:

1. 1 - Combination teacher's cabinet, 66" high x 66" wide x 15" deep for storage and bookcase
2. 1 - Wardrobe cabinet
3. Chalk board - 16'
4. Tack board - 16'
5. Cabinet sink with hot and cold water
6. Food preparation facilities if housed in a separate building
7. Toilet facilities

8. Drinking fountain
9. Hand lavatory

PLAYGROUND EQUIPMENT:

1. Swing
2. Jungle gym
3. Steps
4. Pipes to crawl through
5. Balls

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal
2. 1 - All purpose chair, 17"
3. 4 - Tables, 36" x 60"
4. 16 - Chairs, 15"
5. 1 - Metal storage cabinet
6. 1 - Work bench with two vises
7. 1 - Loom
8. 1 - File cabinet, 2 drawer, letter size
9. 2 - Easels
10. 1 - Mirror, wall type
11. Sewing machine
12. Household furniture - beds, chairs, etc.
13. Cleaning supplies - mop, broom, etc.
14. Iron and ironing board
15. Tools - hammers, saws, screwdrivers, pliers, etc.
16. Piano
17. Record Player
18. Ditto machine

19. Cots for rest period

20. Filmstrip projector and films

21. Portable food handling equipment if food is prepared in school kitchen

CORRECTIVE READING ROOM

Clinical reading classes are conducted in small groups, 12 to 15 with emphasis on individual corrective work. For that reason, the classes must be small in numbers and the course must be clinical in nature. This room may become the school conference room when an elementary counselor occupies the present conference room as an office.

LOCATION:

In the academic area adjacent to materials center room or storage room that is less in size than a regular general purpose classroom. It may be adjacent to or part of the office area.

SIZE:

The room should be one-half to three-fourths of a general purpose classroom in size, about 360 square feet. The area can be used to balance out two bays with an over-sized classroom that uses over one bay.

BUILT-IN EQUIPMENT:

1. Chalk board - 16' placed center on the classroom
2. Tack board - 12' placed on wall adjacent to chalk board

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal
2. 1 - All purpose chair, 17"
3. 4 - Tables, 30" x 72", plastic top and adjustable height
4. 10 to 12 - Chairs, 15"
5. 1 - Metal storage cabinet
6. 1 - Bookcase, 36" x 48" x 9"

MUSIC FACILITIES

Music is an important feature of the elementary school program. Vocal music, from primary songs to the simple part singing of the upper elementary grades, has long been associated with the education of young children. The piano has been standard equipment in the schools for a long time.

Instrumental music, also, is increasing in importance. Rhythm bands are common at early primary level. In the intermediate grades, small ensembles and simple orchestras are organized in many elementary schools.

With the sharp decline in the provision for a specialized room for music, and with the many demands upon the commonly provided multi-purpose rooms, much of the burden of space for the music program is thrown upon the regular classroom. Too often, the needs of the music program have been ignored in the development of the elementary school.

Most of the vocal music program and other forms of music, except instrumental, is conducted by the regular classroom teacher in the regular classroom. She is assisted by the itinerant music teacher who serves more than one school. Many of the above mentioned activities and instrumental music in the upper three grades is conducted in the lunchroom or some other large area that is shared by other instruction. The instrumental music is conducted primarily by an itinerant teacher who serves several schools.

If the school has a spare classroom located near the creative arts or all-purpose area, this room maybe acoustically treated and equipped for the elementary music program. When a spare classroom is used for instrumental music, provision should be made for adequate storage of instruments.

MUSIC ROOM

If a special music room is constructed in the elementary school, it will serve for the vocal music, rhythmic expression, music appreciation, and instrumental music.

LOCATION:

It should be located in or near the creative arts area.

SIZE:

800 to 1,000 square feet to accommodate two elementary classes

BUILT-IN EQUIPMENT:

1. Acoustical tile should be placed on the ceiling and continue down the wall about one-third of the distance.

2. Ventilation should be increased slightly for the size of the area.

3. Chalk board - 16' long on the front of the room. Eight feet of this should be lined with music staves with five lines each 3/16" wide and spaced 1 1/8" between lines.

4. Tack board - 16' long half placed on each side of chalk board at the front of the room

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Teacher's desk, metal

2. 60 - Chairs, 15"

3. 1 - File cabinet, 4 drawer, legal size

4. 1 - Storage cabinet for 100 records, stored vertically

5. 2 - Metal storage cabinets with locks

6. 15 - Student music stands

7. 1 - Conductors music stand

8. 1 - Piano, upright type

9. 1 - Four-speed record player

10. 1 - Tape recorder

11. 1 - Portable table for tape recorder and record player

TV CLASSROOM

Innovations in public school education have always elicited groans of disapproval and fantastic predictions of a new millennium just around the corner. The advent of instructional television has triggered some of the sharpest debate ever heard in educational circles.

The intensity of the controversy appears to spring from a recognition of the sweeping possibilities of television and its general detachment from local classroom control. The bewildering barrage of claims and counterclaims that has surrounded the birth and development of classroom television has clouded the issues and made objective analysis difficult. Those who oppose it point out that it offers one-way communication only. Because it precludes any real interplay of ideas between pupil and teacher.

Since the activation of the first TV station in 1954 in Houston, Texas, television has become an increasingly important medium in all parts of the United States and its use is continuing to grow. It has been estimated that TV is used in the teaching of over seven million pupils in more than 800 school systems and 400 colleges and universities. Much of this instruction is by means of some 500 school or institutional closed-circuit TV systems, but an increasing amount is provided by noncommercial educational broadcast TV stations.

By the close of 1963, there were 85 educational television broadcast stations in the United States. In addition to students in school, they serve a potential home audience in excess of 100 million. The momentum of station planning and activation is steadily increasing as state legislatures appropriate construction and operating funds, and as local school districts and community organizations recognize the advantages of educational television service.

The advantages and disadvantages of television need to be examined against or in conjunction with other types of modern communication media, and in connection with institutional policy involving radio, programed instruction, films, and audio-visual aids generally. The type of ETV service needed must also be determined. It may be an instructional television fixed service, a closed-circuit television service, either by leased or institutionally owned lines, or an ETV broadcast station.

There are several results which may reasonably be expected of the ETV broadcast station. Its ability to provide instructional programs over a wide geographical area at a cost per capita which is small and which becomes smaller as more districts participate, makes it particularly suited to overcoming difficulties faced by the small educational unit.

Television has already had a marked impact upon educational programs in scattered centers where it has been tried. There is no doubt that enormous potential exists here for the development of the media for educational good. The basic problem in the use of television parallels those involved in motion pictures and radio. Shall television be essentially a classroom educational tool used under the direct control of the teacher or shall it be a centrally controlled medium for the general dissemination of programs to children either in a place of assembly or through a central reception and distribution station sending programs to classrooms?

Leading educators belive that television is effective when it becomes an educational tool used by the teacher and introduced by her into the educational program in accordance with the needs of children and the educational task she is accomplishing. This suggests that television sets be available in the classrooms and should be connected to a central school antenna.

In the conventional type school a TV set is placed in the regular classrooms, grade three through grade six, and the transition rooms to receive instruction in science, geography, spanish, music, art, and physical education. In the Stoddard Plan Schools, grade three through grade six, each complete grade spends 90 minutes each day in the large TV receiving room which will accommodate approximately 120 students to receive instruction in geography, science, and spanish. Only the transition rooms have TV receiving sets in the Stoddard Plan Schools.

Teacher demonstrations by TV utilizes expensive training aids to a greater advantage by its wider use in the classroom. Also, the TV teacher is justified in spending more time in improvising training aids and extensive lession preparation due to its wider range of coverage and greater educational impact on the student. The close-up viewing by each student of teacher demonstrations increases the effectiveness of the instruction. TV instruction in the elementary school is conducted in the regular classroom with the exception of the Stoddard Plan Schools which have a large TV receiving room to accommodate an entire grade.

Even when well-prepared television programs are available, the classroom teacher appears to be important in assuring maximum learning in the elementary school. Studies have indicated that classroom learning from television is positively correlated with the instructional competence of the classroom teacher. Other experiments have demonstrated that science teaching via television can be enhanced by student work in the laboratory.

Other research now under way is studying means of combining television and other instructional materials; also,

the relationships among television, teacher characteristics, student characteristics, and the learning environment. A series of investigations have indicated that students learn best from television when the television program requires active student response during or after the telecast.

STODDARD PLAN SCHOOL

LOCATION:

If the school is organized on the Stoddard Plan the large TV receiving room should be located in the quiet part of the large common areas.

SIZE:

40' x 60' to accommodate about 120 students

BUILT-IN EQUIPMENT:

1. Chalk board - 16' placed center of room or two 8' sections placed at two separate places on front wall
2. Tack board - 1 section, 8' to 10' long for each teacher using the area
3. Projection screen - 6' x 8' fastened to center part of front wall over chalk board or suspended from ceiling near the front and center of room
4. Lights - classroom lighting, minimum 40 candle power, each row of lights individually controlled. The section of lights near each TV set should be lightly tilted away from set.
5. Electric panel - near teacher's office or work room
6. Sound cable - run to the TV set that is nearest the panel by the teacher's work room
7. Antenna - on roof of TV room if possible to improve reception and reduce building interference
8. TV outlets - one for each 30 students, placed for maximum viewing
9. Microphones - outlets for teacher at the front of the room and two stations for students in floor at two well spaced locations

10. Amplifier - separate one to accommodate the TV area, connected to speakers in TV room

11. Two column speakers - one in each front corner

OTHER FURNITURE AND EQUIPMENT:

1. 100 to 120 - Chairdesks, 15" - alternate rows may have opposite arms for double rows of seats if needed

2. 1 - Wall mount or TV stand 4' high for each TV set

3. 1 - Overhead projector

4. 1 - Overhead projector cart on casters

5. 1 - Filmstrip machine

6. 1 - Projection table on casters for filmstrip machine

TV WORK AND CONFERENCE ROOMS

LOCATION:

It should be adjacent to or part of the regular TV room.

SIZE:

10' x 15'

BUILT-IN EQUIPMENT:

1. Tack board - 4' x 8'

2. Electric outlets for typing desks

3. 1 - 8' section of work cabinet, counter height, with plastic top, sink, and shelving. This should be placed on end wall in TV aides' work room

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Double pedestal typing desk for each TV aide

2. 1 - Swivel type typists chair for each TV aide

3. 1 - Teacher's desk, metal, for each TV teacher

4. 1 - All purpose chair, 17", to match each teachers' desk

5. 1 - File cabinet, 4 drawer, letter size, for each teacher

6. 1 - Bookcase, 36" x 48" x 9", for each teacher

7. 1 - Section metal shelving, 36" wide x 12" deep x 87" high, for each teacher

LIBRARY

An essential part of all good elementary school programs is the library service. The library has become the hub of the school as teaching methods are projected toward the use of library materials. The elementary school library is conceived as being a materials center as well as a centralized collection of printed and audio-visual materials. It should function as the central storage and distribution center for resource books, reference materials, and unit materials. Emphases on the library is not confined to junior and senior high schools. In fact the highest circulation of books is in the elementary school.

The school library should be the physical unit around which the remainder of the school is built. The library should be visited through the entire school day by class groups or individuals seeking information and guidance which books, magazines, and pictures alone can give. The library should be sonsidered a major teaching station and a learning center that extends the curriculum, provides opportunity for independent reading and research, and insures satisfying leisure activity.

The library is the instructional heart of the educational plant and should be an inviting and attractive physical unit. It should contain or have adjacent to it a library work room and an audio-visual materials room. It may be divided by low shelving into a primary area and an intermediate and upper grade area.

LOCATION:

The library is considered as a part of the central portion of the grade school building. This location makes it readily available to all classes, centralizes the traffic problem, and offers an opportunity for supervision and wider use. Accessibility to the upper grade classrooms is given first consideration. A certain seclusion from traffic and noise is desirable.

SIZE:

It should contain about 1,100 square feet with additional space for a library work room and an audio-visual materials room. It should be large enough to seat about 36 students.

BUILT-IN EQUIPMENT:

1. The shelving that is fastened to the wall should be 36" wide x 9" deep x 5' or 6' high per section, with or without backs

2. Counter shelving sections 36" wide x 9" deep x 40" high, double faced with 3 shelves on each side for additional shelving and space dividers

3. There should be 1 lineal foot of library shelving for the maximum of students that eventually will be enrolled in the school to be served.

4. Tack board - 3' x 5' placed near entrance - paint wall behind it

5. Chalk board - 4' x 8' placed on front wall - paint wall behind it

6. The ceiling and probably the floor should be sound treated.

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Librarian's desk

2. 1 - Librarian's chair

3. 8 - Four place tables, 36" x 54" or 6 - Six place tables, 30" x 72"

4. 32 to 36 - Chairs, 15"

5. 1 - Magazine rack - single faced

6. 1 - Card catalog, 15 drawer complete, 26" leg base

7. 1 - Dictionary stand

8. 1 - Book truck

WORK ROOM

LOCATION:

It should be located adjacent to or within the main library.

SIZE:

8' x 12'

BUILT-IN EQUIPMENT:

1. Observation window, observing the entrance

2. Cabinet with sink and 26' deep counter top and a section of cabinet over counter.

3. Three sections metal shelving, 36" x 12" x 87"

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Desk, single pedestal, 26" x 48"
2. 1 - Chair
3. 1 - File cabinet, 4 drawer, legal
4. 1 - Metal storage cabinet
5. 1 - Table, 30" x 60"

MATERIALS CENTER

LOCATION:

It should be located adjacent to or within the main library, with entrance from the library and may have an outside entrance or service window.

SIZE:

8' x 12'

BUILT-IN EQUIPMENT:

1. Work counter with cabinet and shelving - sink (optional) placed on one wall. Cabinets may be constructed above counter.
2. Metal shelving - 36" x 12" x 87" on adjacent wall
3. Metal shelving - 36" x 24" x 87" offset type on another wall

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Table, 30" x 72"
2. 4 - Chairs, 17"

PHYSICAL EDUCATION FACILITIES

Despite recent gains, physical education still is the stepchild of the academic family. Often it is the last subject included in the school curriculum, and it usually is the first to feel the pressures of rising costs and overcrowding. Many otherwise modern elementary schools have no gymnasiums, and those that do have them frequently convert them to uses other than physical education.

Physical education's low priority stems partly from the failure--by both school administrators and the public--to appreciate its role in total education. While most people recognize that exercise and sports have immediate value, far too few regard these activities as doing anything substantial to prepare students for life beyond their school years.

There are at least three pressing reasons why good physical education programs--and good physical educational facilities--are more important today than ever before:

1. Our way of life no longer provides the vigorous physical activity necessary for healthy development.

2. Recent research indicates a direct relationship between physical fitness and academic and social performance.

3. The increase in leisure time requires that we prepare people to use it enjoyably and constructively.

If physical education's only function were the primary one of getting students physically fit, elaborate facilities would not be essential. Space for running and doing calisthenics would suffice. However, if physical education is to be truly educational and equip students with the knowledge, skill, and motivation to remain fit throughout their lives, facilities are important.

The President's Council on Physical Fitness reports that: there has been a tremendous increase in the number of children taking part in school physical education programs, along with this has been a pronounced trend toward more frequent physical education periods. About 86 percent of students participated in some form of organized physical education classes while two years earlier only about 50 percent participated. Of this group, 60 percent participated at least three times weekly and 37 percent had daily physical education periods.

Adequate school facilities are necessary if schools are to meet the challenges of the modern day school curriculum. It is necessary that planners of school plants keep in mind the function of various phases of the curriculum. In physical education the major functions commonly accepted are to promote the health and physical development of the pupils by engaging in useful physical skills, socially useful practice, and wholesome physical recreation. To attain these objectives, the pupils must participate in a great variety of physical activities. This makes it important to give proper attention to site selection, indoor facilities, and outdoor areas. Health, physical education, recreation, and some athletics are all a part of one large elementary curriculum area and should be considered as one area in planning and developing the facilities.

PHYSICAL EDUCATION ROOM

The physical education room will accommodate the elementary health and physical education program and its related activities. It may also serve as the large assembly space for the elementary school and for after-school and evening group activities of recreational and social nature. This space should be conducive to games, rhythms, dancing, sports, team games, stunts, and physical fitness activities. Protrusions and obstructions should be minimized.

Along with other innovations in educational facilities, the physical education plant has come in for its share of experimentation. One of the outstanding provisions, which is part and parcel of recommendations, is the inclusion of a physical education room for elementary schools in the building plans of a new school. A new trend in facilities is in the construction of the physical education room itself. There are many shapes that are designed for multi-purpose use.

LOCATION:

It should be located in the facilities wing of the school with direct access to the outdoor intermediate and upper grade blacktop play area. Provision for after-school and evening use by the community should be considered in planning entrances so that the rest of the building may be undisturbed. Toilets, lavatories, and drinking fountains should be nearby, easily accessible from indoors and outdoors.

SIZE:

It should be about 40' x 60' or contain 2,400 square feet with at least a 15 foot ceiling preferably 20 to accommodate students from two elementary classes.

BUILT-IN EQUIPMENT:

1. It should have additional acoustical treatment to control the excess play noise.

2. 6 - Mat hangers on one end of gym near dressing room

3. It should contain limited storage room for physical education equipment - 6' x 20' to store the longest equipment

4. It should contain limited and separate dressing facilities for boys and girls - 12' x 20' each

5. Small office if there is to be a regular physical education instructor - 6' x 8'

6. The floor may be marked for basketball and two back boards added if the community is to use it for recreational purposes.

OTHER FURNITURE AND EQUIPMENT:

1. Floor mats

2. Balancing beams

3. Chinning bars

4. Hanging ropes

5. Other equipment

BLACKTOP PLAY AREA

LOCATION:

Any teacher who ever taught in a classroom adjoining a school playground would appreciate the thoughtful arrangement of playground space at any school. The primary playground should be located on that side of the school which encompasses the primary classrooms, while the intermediate playground should be located on the opposite side near the fourth, fifth, and sixth grade classrooms. The benefits are reciprocal in that, while primary classes are having recess,

they do not disturb the intermediate grades and vice versa. Both of these playgrounds should be located well away from the building, thus keeping auditory interference with classwork at a minimum.

PRIMARY PLAYGROUND

In general, it is desirable to provide separate facilities for the younger children so that the conflict between their simple games and those of the upper grades can be reduced. Suitable buffer zones should be introduced between primary and upper grade areas, as well as between other specialized outdoor spaces.

TYPE OF ACTIVITIES:

For children in the primary grades, activities tend to be carried on as individuals or small groups. Therefore, activities for the primary children include running, jumping, skipping, hopping, throwing, catching, and kicking.

MARKING:

This area should be marked for simple individual and team games recommended in the primary grades.

SIZE:

50' x 100'

UPPER GRADE PLAYGROUND

TYPE OF ACTIVITES:

Activities of older children include softball, kickball, touch-football, soccer, basketball, and volleyball.

MARKING:

The intermediate and upper grade blacktop play area should be marked for kickball, volleyball, and other similar games.

BASKETBALL:

Install one double faced basketball facility with two goals. Mark the area under each basketball goal.

SOFTBALL:

One softball back stop should be located out from the play area so that foul balls will not interfere with play on the blacktop area or with parked cars.

DRINKING FOUNTAINS:

1. 1 - Outside freeze-proof drinking fountain conveniently located for each playground.

PART V

UTILITY AREAS

LUNCHROOM

Lunch is a part of the program in many elementary schools. It can make an important contribution to the health of pupils by providing well-balanced meals. There is much variation in the provisions and arrangements for lunchroom organization and service.

A lunchroom of an elementary school should be an attractive space with an inviting color scheme, well-lighted, and acoustically treated ceiling. It should have a direct access to the outside. The lunchroom should be separated from the serving area and kitchen by a complete wall with two separate doors.

Although the lunchroom is designed essentially for seating pupils to eat at a table, the rather universal establishment of lunchrooms in the elementary schools has directed much thought toward utilization of the lunchroom space outside of the noon hour. It can serve as a school assembly room during the school day and as an assembly room for PTA and other community meetings and activities at other times.

LOCATION:

The lunchroom should be located in the common area away from the classrooms and not to far from the school offices.

SIZE:

It should be rectangular in shape and 40' x 80'. It should seat about one-third of the student body or 240 pupils.

BUILT-IN EQUIPMENT:

1. Should contain a folding partition between it and physical education room
2. Stage with curtains and a cyclorama track
3. Electric outlet for clock
4. Outlets for PA system
5. Ventilation to dissipate food odors
6. Provisions for darkening the room for visual aids
7. Drinking fountain

OTHER FURNITURE AND EQUIPMENT:

1. 40 - Multi-purpose tables, each 8' long
2. Microphone and stand
3. 288 - Folding chairs
4. 4 - Vertical folding chair racks

KITCHEN

A kitchen is very expensive and can cost as much as 10 percent of your entire building cost if not carefully planned. Price, quality, availability, and service are the most important factors to consider.

LOCATION:

It should be located adjacent to the lunchroom and away from the main part of the school building. The serving line should enter the kitchen from one side of the lunchroom and the dishwasher and soiled dish window at the other side of the lunchroom.

SIZE:

36' x 55'

BUILT-IN EQUIPMENT:

1. Serving counter
2. Dishwasher with canopy
3. Soiled dish window
4. Soiled dish table
5. Clean dish table
6. Cook's table with saucepan rack
7. Baker's table
8. Sandwich table
9. Dish storage cabinet
10. 2 - Ranges with two compartment type oven

11. Range canopy with 8 moisture proof light fixtures
12. 1 - Roast oven
13. 1 - Steam jacketed kettle, 40 gallon
14. 1 - Potato peeler, floor type, 20 pound capacity
15. 1 - Food cutter, bench type
16. 1 - Slicer
17. 1 - Mixer, 20 quart capacity with accessories
18. Wash basin
19. Vegetable sink
20. Pot and pan sink

OTHER FURNITURE AND EQUIPMENT:

1. Trays, silverware, dishes, and cooking utensils

REGRIGERATED STORAGE

LOCATION:

It should be located on the opposite side of the service entrance from the dry storage.

SIZE:

An area about 6' x 12' to place walk-in refrigerator and walk-in freezer side by side. The freezer may have an entrance from the refrigerator.

BUILT-IN EQUIPMENT:

1. 1 - Reach-in refrigerator
2. 1 - Walk-in cooler, 6' x 8' x 7' 6" - floor level with kitchen floor
3. 1 - Walk-in freezer with door opening from walk-in cooler to freezer

DRY STORAGE ROOM

LOCATION:

It should be located at the end of the kitchen near the delivery entrance.

SIZE:

18' x 22'

BUILT-IN EQUIPMENT:

1. Wall shelving - 36" x 12" x 87"
2. Island shelving - 36" x 24" x 87"
3. Lights centered on shelving aisles
4. Exhaust fan

OFFICE AREA

LOCATION:

It should be located near the service entrance. It should have one short section of wall 4' to 5' high to place desk against.

BUILT-IN EQUIPMENT:

1. Extension phone outlet
2. Intercom phone

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Small desk, single pedestal
2. 1 - Chair, 17"
3. 1 - File cabinet, 4 drawer, letter size

DRESSING ROOM AND RESTROOM

LOCATION:

It should be in the back corner opposite the dry storage area and adjacent to the can cleaning area.

SIZE:

7' x 11'

BUILT-IN EQUIPMENT:

1. 1 - Commode - restroom
2. 1 - Wash basin - restroom
3. 8 to 10 Coat hooks on one end of dressing room

MAINTENANCE AREA

LOCATION:

It should be located at the end of the kitchen near the dressing room.

SIZE:

4' x 6'

BUILT-IN EQUIPMENT:

1. 1 - Mop sink
2. 1 - Wash can area with can spray cleaner and a floor drain
3. 1 - Garbage can truck

LOADING DOCK

LOCATION:

It should be located outside the kitchen door used as a service entrance. The floor should be level with the kitchen floor.

RESTROOM FACILITIES

The teaching of good health habits, sanitation, and cleanliness is becoming more and more an accepted part of the elementary school program. For this reason, planning of facilities for pupils and staff members should be considered in the light of educational needs as well as sanitary requirements.

Many school buildings throughout the country have been designed with excessive numbers of fixtures. In some cases, this has been brought about by the nature of the educational program. In other situations, it is due to excessive code requirements or lack of knowledge of school needs. The architect will wish to eliminate any waste in numbers of fixtures and floor area assigned to these facilities, and to provide for the educational needs as economically as possible.

PRIMARY CLASSROOM FACILITIES

A vital part of the primary program is helping children to learn how to assume responsibility in personal hygiene. Washing hands, going to the toilet, taking care of a simple nosebleed or stomach upset--are all real factors in daily primary life. In general, primary teachers desire to have personal control in guiding their pupils in the handling of such matters. Group or central facilities are to be avoided. Provisions are needed in direct connection with the classroom, so planned that teacher-supervision can be maintained over toilet room and classroom simultaneously. The higher the grade the less frequent is the use of a single toilet for boys and girls.

Toilet facilities in the classroom wings are unique in that the first and second grades are self-contained and include both a water closet and an urinal. The introduction of the urinal into the lower elementary toilets provides the dual purposes of acquainting the boys with this type of facility and of providing a clean water closet seat for girls.

INTERMEDIATE AND UPPER GRADE FACILITIES

Group central toilet facilities are generally planned for children above the primary grades. The location of these units is most important. Ease of access and travel distance are governing factors. Modern practice offers much greater flexibility, and children are permitted to go to the toilet room whenever the need arises. Fewer facilities, with better distribution, are needed.

LOCATION:

The sanitary units for the intermediate and upper grades should be strategically located for accessibility and supervision. Toilet rooms should be placed on circulation route to and from the lunchroom and playground and arranged for use with playground when the building is otherwise locked. Toilet rooms should be arranged so that children using the entrance way cannot see in the actual toilet rooms.

SIZE:

Girls - 14' x 26'
Boys - 11' x 26'

This will accommodate the upper four grades of a school for 720 students. If there is to be a four room addition, the facilities should be slightly larger to provide for the addition. If some of the upper four grades are placed on two separate floors, the restrooms should be similarly divided.

BUILT-IN EQUIPMENT:

1. Girls

   a. 5 - wash basins - 25" from floor
   b. 4 - soap dispensors
   c. 3 - towel racks
   d. 3 - mirrors - placed on wall over shelving
   e. 11 - commodes
   f. partitions 10" off floor with doors hung on gravity hinges
   g. install screen at entrance
   h. doors lightly louvered to cut down noise
   i. tile or terrazzo floor
   j. washable walls
   k. coat hooks near entrance
   l. shelving for books near entrance
   m. floor drain
   n. vent room by means of a vent duct

2. Boys

   a. 5 - wash basins - 25" from floor
   b. 4 - soap dispensors
   c. 3 - towel racks
   d. 5 - commodes
   e. 11 - urinals - floor type
   f. partitions 10" off floor
   g. install screen at entrance
   h. doors lightly louvered to cut down noise

i. tile or terrazzo floor
j. washable walls
k. coat hooks near entrance
l. shelving for books near entrance
m. floor drain
n. vent room by means of a vent duct

CUSTODIAL AREA

The custodial area includes the custodial supply room, mechanical room, and a small custodial supply room in another wing or floor of the building.

CUSTODIAL STORAGE ROOM

LOCATION:

Near the center of the school building for convenience of operation.

SIZE:

16' x 30' with an entrance from the corridor

BUILT-IN EQUIPMENT:

1. Wash basin
2. Mop sink
3. Metal shelving

OTHER FURNITURE AND EQUIPMENT:

1. 1 - Desk
2. 1 - Chair, 17"
3. 1 - Work bench with vise
4. 1 - Storage cabinet

MECHANICAL ROOM

LOCATION:

Adjacent to custodial supply room with an entrance from it.

SIZE:

20' x 30'

BUILT-IN EQUIPMENT:

1. 1 - Large horizontal hot water heater for building
2. 1 - Horizontal water heater for dishwasher
3. 1 - Small vertical water heater for classroom sinks and wash basins in the self-contained classrooms

OTHER CUSTODIAL STORAGE

LOCATION:

One or more small custodial storage and mop rooms located in another wing or floor of the building.

SIZE:

4' x 5'

BUILT-IN EQUIPMENT:

1. Metal shelving
2. Mop sink

LIGHTING

Seeing is a complex process. Good vision alone is not enough. It is light which gives our eyes the power to interpret objects, colors, distance, and depth. Visual development in humans is not fully complete at birth and, although rapid, this development continues until the tenth year of growth. Optimum viewing conditions, then, are most important to children during these years.

Good seeing conditions directly relate to other body organs and senses, as well as being a direct influence on visual development or deterioration. Poor lighting can impair vision, cause general body fatigue, and increase body tension. Too long concentration on close tasks, without the exercise of distance viewing, causes eye fatigue and strain. Distance viewing is important as a relief for eye muscles that are concentrating on close tasks. The opportunity for students to look outdoors, beyond the confines of the schoolroom, is a healthy eye exercise as well as a welcome relief and psychological release for the mind from the tasks at hand. A tired, tense student cannot respond alertly to the learning activities of the schoolroom. Good seeing, then, also directly relates to a good teaching and learning situation.

The modern educational environment has many aspects. School building planning is concerned with the development of this environment, as well as spaces and facilities. One of the elements establishing the environment is light which has become an essential consideration in school design. During recent years, much emphasis has been given to the improvement of natural and artificial lighting in schools.

Proper conditions for seeing are axiomatic in a modern school. A pleasant environment, designed to create interest and enthusiasm and stimulate learning, is also a principal aim of school planners. The modern school program imposes a heavy burden on the eyes, not only in the extent and continuity of seeing, but also in the wide variation of task requirements. It should be the school planner's aim to make certain that the conditions for seeing permit this burden to be carried without harmful strain or fatigue. No part of building planning has so direct a relation to human health, human development, and intellectual growth as the design of the lighting system.

In schools, light comes from two sources--natural daylight and electric lighting systems. Both natural and artificial lighting may contribute to these goals significantly through attention to the educational and physiological needs of the children and teachers. Natural daylight is unstable as a primary light source but can be controlled with glare reducing glass, louvers, roof overhangs, and window coverings like drapes or blinds. Daylight today is rarely relied upon as the sole

light source for school interiors, but its unreliability is no excuse for the elimination of windows from educational buildings. Maximum use should be made of artificial light and minimum admission of natural light should be made in all classrooms.

Criteria for light intensity or quality at desk top levels have only limited meaning in terms of the modern educational program. Neither can it be assumed that the pupils will be facing in any one direction. Better that the designer understand that pupils will be in many different activities, facing in all directions, on the floor, seated and standing--all at the same time.

Electric lighting systems are being perfected to a fine point of control. The growing awareness and recognition of the factors that contribute to good lighting have helped to disseminate much useful information. An engineering background is not necessary to understand the following basic principles behind good lighting:

1. The level of lighting is measured by footcandles.

2. The reflection factor is the amount of light which falls on a surface and is reflected from that surface.

3. Brightness is the luminous intensity of a surface.

4. Glare results when brightness is too high.

A lighting system should provide the desired level of illumination (footcandles) with reflection from room objects planned to blend into the overall scheme. Brightness should be controlled and balanced to prevent glare and subsequent fatigue.

No lighting fixture or system can be recommended for any specific task. Building planners and designers have basic decisions to make and the illuminating engineer can help them to implement the lighting desired for particular activities. With the coordinated environmental planning now being practiced, lighting systems are considered when the overall mechanical system for heating, ventilating, and cooling is designed. Heat from lighting fixtures can be incorporated into the heating scheme, and must certainly be considered when cooling and ventilating systems are being planned.

Good lighting does not result alone from the choice of fixture and lamp; although, these are very important. The building itself, the amount and placement of glazing, ceiling height, textures of finish materials, colors of walls, floors, and ceilings, the type and color of furnishings and equipment, and other factors affect the total lighting.

Lighting systems can also be planned as an integral part of the structural ceiling, as was designed for the California school component construction system.

The various systems of lighting are:

1. Luminous systems use the whole ceiling as the light source.

2. Indirect systems direct light to the ceiling and upper walls which reflect it to all parts of the room.

3. Semi-indirect systems direct from 60 to 90 percent of the light upward to be reflected downward.

4. General diffuse systems direct equal amounts of light upward for reflection and directly downward.

5. Semi-direct systems direct a small percentage of light upward, and from 60 to 90 percent of light directly downward. Direct systems direct almost all light downward from the source.

Low transmission glass is being marketed. This glass has all the "looking out" advantages of windows without any of the glare and heat problems they once presented. Also, new materials have been developed that can be used as a "sandwich" glass in new buildings or applied easily to windows in existing buildings to cut down glare and heat problems. The advent of low transmission glass and other types of glazing materials that reduce both light and heat transmission into space has made practical some re-emphasis on controlled daylight design. New, higher efficiency electric lamps are now available to serve both new building design and, more importantly, the relighting needs of existing buildings.

Classroom lighting should be about 40 to 50 footcandles of constant, shadowless, and glarefree light on the working surfaces. The library should have about 70 footcandles. General purpose and utility areas should have 20 to 30 footcandles of light. Storage areas should have 10 to 15 candlepower of light furnished by incandescent lights. The corridor lights should have alternate lights on two separate circuits for variable lighting.

The complexity of the task of providing a good visual environment should not deter educational administrators from their major responsibility as joint decision-makers with their architects and engineers when a new building or addition is being planned. In the remodeling and modernization of older buildings, lighting is also a major planning aspect.

No new educational plant can justify its existence except in terms of its use by people or its direct benefit to people. Good vision and good seeing conditions are major factors in this benefit. The progress of time and man has put new meaning to the words "let there be light."

PART VI

SCHOOL SITE

SCHOOL SITE

The site is an integral part of the total school plant and may contribute to or hinder the achievement of a school's education objectives. Most people now recognize that the modern educational program cannot be confined within the walls of the school building. A modern program promotes many activities that must be carried on outdoors. Physical education and school and community recreation make specific demands for outdoor areas that are well-planned and properly developed. The school site should be such that it will contribute positively to the health, safety, and social aspects of the child's life at school.

Every tree, shrub, pond, ant hill, and other natural features that can be used in the instruction program should be spared during the grading of the site. The school will be provided with an outdoor laboratory--entra classrooms that could enrich the school curriculum.

Choosing a good site is one of the important early steps in over-all plant planning. In our suburbian area, the site should be chosen and purhcased in the early stages of new developments before the price of adjacent land sky rockets and the choice of selection is reduced. Ample consideration should be given to certain basic principles involved in good site selection. These principles, when studied in the light of their relation to the local situation, should provide a basis for the objective selection of the best site available.

In selecting a site for school purposes, due consideration should be given the following factors:

1. Accessibility and Safety

   The site should be readily accessible from main highways. The site must be so located that a safe sight distance of at least 500 feet may be maintained at all vehicle exits and entrances to and from the site onto public roads, streets, or highways.

2. Size

   The site shall be of adequate size and proper shape to provide for development of ample playground facilities and future expansion. The minimum size of school site for elementary schools should be five acres plus an additional acre for each 100 or fraction of 100 students of anticipated enrollment.

3. Topography

   The general topography of the site should be such as to allow for adequate and economical development.

4. Surroundings

   The site should be from disturbing noises, distracting influences, and hazardous surroundings.

BUILDING LOCATION:

1. Locate the building near the main road but off-center on the site to allow for maximum development of playground and recreational facilities.

2. Locate for minimum sun and glare exposure, heat built-up, and noise attenuation.

3. Public access to the publicly used portions of school plant should be convenient.

4. Building should be placed in such a manner that undue number of walks and drives will not be required.

WALKS AND DRIVES:

1. Entrance to school should be located on a lesser traveled road whenever possible.

2. There should be minimum conflict between parents delivering students, teachers entering school grounds, and school buses.

3. There should be very little conflict between service and delivery trucks and the students entering and leaving the play area during the school day.

4. Safe walks adjacent to, entering, and on the school property for the students.

5. The sidewalks along the driveways should be concrete and contiguous to curbs.

6. They should be not less than 5' in width and shall be kept clear of hydrants, poles, and other hazards.

PARKING AREA:

1. Staff parking for 15 to 20 cars near the front of the building.

2. Visitor parking for 6 to 8 cars near the entrance to building.

3. Ample bus parking parallel to curb under covered walkway at the front entrance to school building.

4. Total parking for approximately 200 cars, including total blacktop play area, for various school functions.

GRADING:

1. All grading must be completed before seeding.

2. There shall be no grade with over 12% slope, except between the walks and the building, for mowing with power machinery.

3. Balanced cut and fill must be used to avoid unnecessary movement of earth to and from the site.

4. Proper on site and off site drainage must be provided.

5. All excavated areas must be covered with top soil for seeding purposes.

LANDSCAPING:

1. Planting should be located around the main approach or front of the building and should furnish a proper setting for the building.

2. Enough shrubs and trees should be planted to blend the building into the landscape.

3. Place shrubs so that power mowers can be used to cut the grass.

FENCING:

1. The practice of using fence on the school site varies with the need of the school.

2. The front of the building site should be fenced to control unauthorized traffic when there are no school activities.

3. Fencing may be constructed where the students enter the school grounds through subdivision property, especially along the walks.

4. Public utilities should be fenced to guard against vandalism.

ACKNOWLEDGEMENT

The Jefferson County School System wishes to acknowledge the valuable assistance received by the State Department of Educations, School Systems, Professional Books, Pamphlets, Booklets, and Magazines listed below.

NEW BUILDING MANUALS

A Guide. . .For Planning Elementary School Buildings - Los Angeles City Schools

Report of Recommended Education Specifications for the New Bellevue Elementary School - School Housing Division, A.G. Adinolfi, Director, Department of Planning and Building Studies, Merle Henrickson, Director

Tentative Guide for Planning an Elementary School Plant - San Diego City Schools, San Diego, California

Design Manual for Elementary Schools - Government of the District of Columbia, Department of Buildings and Grounds

What the School Business Official Must Know about Changes in Education to Build Good Schools - Arthur Templeton, Des Moines, Iowa Public Schools

REFERENCE BOOKS

The Nongraded Elementary School - Goodlad and Anderson

New Dimensions for Progress - American Association for Health, Physical Education, Recreation, A Department of the National Education Association

Report to the People - Burlington City Schools

Planning Elementary School Buildings - N.L. Engelhardt, N.L. Engelhardt, Jr., Stanton Leggett

Planning School Plant Construction - Department of Education, Frankfort, Kentucky

BOOKLETS

Functional Schools for Young Children - United States Department of Health, Education, and Welfare

BOOKLETS (CONTINUED)

Profiles of A Significant School

Rockwood Elementary School - Rockwood, Tennessee
Belaire Elementary School - San Angelo, Texas
Heathcote Elementary School - Scarsdale, New York
Riverview Gardens Elementary School - St. Louis, Missouri

Matching Your Educational Equipment with Your Educational Goals Through Educational Specification - National School Supply and Equipment Association

MAGAZINES

American School Board Journal

The Nation's School

School Management

American School and Universities

NEA Journal

KEA Journal

School Life

Elementary School Magazine